

### **Amendment to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application:

#### **Listing of Claims:**

1. (Currently amended) A method for providing a hierarchical representation of a program, said method operable at least in part within an information processing system, comprising:
  - a. determining an object containment hierarchy (OCH) for a first portion of the program;
  - b. annotating the OCH with a temporal flow hierarchy (TFH) from the program to form an annotated OCH for the program; and
  - c. ~~displaying~~ presenting a user with at least a portion of the annotated OCH in response to a ~~user~~ selection made by the user.
2. (Original) The method of claim 1, wherein steps a and b are performed by a program analysis tool based on structural and functional data of the program.
3. (Original) The method of claim 2, further comprising, prior to step c, displaying a portion of the OCH in response to a selection of a coding pattern, wherein said tool is a debugger and said user selection is a selection of an object in said first portion of the program related to said OCH.
4. (Original) The method of claim 3, wherein the OCH comprises at least one of a first group of an object reference hierarchy and a data dependence hierarchy, and step b comprises adding temporal flow information from at least one of a second group of a control flow hierarchy, an invocation hierarchy, an allocation hierarchy, and an object creation hierarchy.
5. (Original) The method of claim 3, wherein the OCH comprises one of a textual, graphical and aural representation of the first group.

6. (Original) The method of claim 4, wherein step c comprises opening a scrollable window responsive to user action for displaying said portion of the annotated OCH, and displaying a related portion of source code of the program in a second window.

7. (Original) The method of claim 2, wherein said tool is one of a group of profiler, debugger, and quality analyzer, and step a further comprises determining the TFH for the first portion of the program.

8. (Original) An information handling system comprising a processor and a program analysis tool, the program analysis tool comprising plural instructions and said processor being operably configured to execute said plural instructions, wherein said plural instructions comprise:

first instructions for determining a program hierarchy for a program based on an output of said tool,

wherein the program hierarchy comprises a combination of an object containment hierarchy (OCH) and a temporal flow hierarchy (TFH) of the program; and

presentation instructions for presenting at least a portion of the program hierarchy in response to a user input.

9. (Original) The system of claim 8, wherein the first instructions comprise second instructions for determining the OCH for a first portion of the program and further instructions for annotating the OCH with information from the TFH to form an annotated OCH for presenting as said portion of the program hierarchy.

10. (Original) The system of claim 9, wherein said tool is a program understanding tool operable for performing the first instructions based on operational data of the program.

11. (Original) The system of claim 10, wherein said program understanding tool is one of a group of profiler, debugger, and quality analyzer, and the second instructions are further operable

for determining the TFH for the first portion of the program.

12. (Original) The system of claim 10, wherein said program understanding tool is a debugger, the system further comprising instructions for displaying a portion of the OCH in response to a selection of a bug, and the presentation instructions being operably responsive to said user input wherein the user input is a selection of an object in said first portion of the program related to said OCH.

13. (Original) The system of claim 10, wherein the OCH comprises at least one of a first group of an object reference hierarchy and a data dependence hierarchy, and the second instructions are operable for adding temporal flow information from at least one of a second group of a control flow hierarchy, an invocation hierarchy, an allocation hierarchy, and an object creation hierarchy.

14. (Original) The system of claim 8, wherein the OCH comprises one of a textual, graphical and aural representation of the first group.

15. (Original) The system of claim 8, wherein the presentation instructions are operable for opening a scrollable window responsive to user action for displaying said portion of the annotated OCH, and displaying a related portion of source code of the program in a second window.

16. (Original) A program product in a signal bearing medium executable by a device for presenting a hierarchical representation of a target program, the product comprising:

first instructions for determining a program hierarchy for the target program based on an output of said product,

wherein the program hierarchy comprises a combination of an object containment hierarchy and a temporal flow hierarchy of the target program; and presentation instructions for operably presenting at least a portion of the program hierarchy in response to a user input.

17. (Original) The program product of claim 16, wherein the first instructions comprise second instructions for determining the OCH for a first portion of the program and further instructions for annotating the OCH with information from the TFH to form an annotated OCH for said presentation instructions to operably present.

18. (Original) The program product of claim 17, further comprising a program understanding tool operable for performing the first instructions based on operational data of the program.

19. (Original) The program product of claim 18, wherein said tool is a static analysis tool, the program product further comprising instructions for displaying a portion of the OCH in response to a selection of a program structure, and the presentation instructions being operably responsive to said user input wherein the user input is a selection of an object in said first portion of the program related to said OCH.

20. (Original) The program product of claim 19, wherein the OCH comprises at least one of a first group of an object reference hierarchy and a data dependence hierarchy, and the second instructions are operable for adding temporal flow information from at least one of a second group of a control flow hierarchy, an invocation hierarchy, an allocation hierarchy, and an object creation hierarchy.

21. (Original) The program product of claim 20, wherein the OCH comprises one of a textual, graphical and aural representation of the first group.
22. (Original) The program product of claim 20, wherein the presentation instructions are operable for opening a scrollable window responsive to user action for displaying said portion of the annotated OCH, and displaying a related portion of source code of the program in a second window.
23. (Original) The program product of claim 18, wherein said tool is one of a group of profiler, debugger, and quality analyzer, and the second instructions are further operable for determining the TFH for the first portion of the program.
24. (Currently amended) A program analysis apparatus, operable for determining and presenting a hierarchical representation of a target program, the apparatus comprising program analysis instructions and a processor and memory operably configured to run said instructions, said instructions comprising:
- first instructions for determining a program hierarchy for the target program based on an output of said ~~product apparatus~~, wherein the program hierarchy comprises a combination of an object containment hierarchy and a temporal flow hierarchy of the target program; and
  - further instructions for presenting at least a portion of the program hierarchy in response to a user input.
25. (Original) The apparatus of claim 24, wherein the first instructions comprise second instructions for determining the OCH for a first portion of the program and third instructions for annotating the OCH with information from the TFH to form an annotated OCH for presenting as said portion of the program hierarchy, the first instructions being further part of a program analysis software tool operable for performing the first instructions based on operational data of the program.

26. (Original) The apparatus of claim 25, wherein said tool is a profiler, the apparatus further comprising instructions for displaying a portion of the OCH in response to a selection of a program structure, and the presentation instructions being operably responsive to said user input wherein the user input is a selection of an object in said first portion of the program related to said OCH; and wherein the OCH comprises at least one of a first group of an object reference hierarchy and a data dependence hierarchy, and the further instructions are operable for adding temporal flow information from at least one of a second group of a control flow hierarchy, an invocation hierarchy, an allocation hierarchy, and an object creation hierarchy.

27. (Original) The apparatus of claim 26, wherein the OCH comprises one of a textual, graphical and aural representation of the first group.

28. (Original) The apparatus of claim 26, wherein the presentation instructions are operable for opening a scrollable window responsive to user action for displaying said portion of the annotated OCH, and displaying a related portion of source code of the program in a second window.

29. (Original) The apparatus of claim 25, wherein said tool is one of a group of profiler, debugger, and quality analyzer, and the second instructions are further operable for determining the TFH for the first portion of the program.